

Emerging Patterns of Participation in Virtual Live Concerts: An Initial Study of UK Audiences Post-COVID

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Abstract

Digital disruption has radically reorganized the sociality and economics of the music industries. This is perhaps nowhere more apparent than at 'virtual' concerts in Massive Multiplayer Games such as Fortnite, in Virtual Reality platforms such as VRChat and in web 3.0 worlds such as Decentraland. This article presents the results of a study exploring the behaviours and values of audiences of live online music events. We begin by reviewing the existing literature on livestream and virtual music. We introduce our study of 1003 UK respondents, conducted in early 2023, finding shifts in audience behaviour and values that have endured beyond the era of COVID isolation. We conclude with insights about the present limitations to the appeal of virtual music events, the key features that are likely to drive greater adoption and participation, and a proposal for live music events in the metaverse that aligns with audience values.

KEYWORDS: metaverse, live performance, virtual concerts, virtual reality, livestream, audience behaviour

Introduction

Live music performances in online spaces have existed since at least the launch of the online virtual world Second Life in 2003, but they have only recently crept into the mainstream public consciousness. One reason for this is the COVID-19 pandemic restrictions on public gatherings, which supercharged interest in and development of ‘virtual’ performances. Performers, many of whom had already seen income from recorded music decrease with the ascendancy of streaming platforms, saw income from live music gigs drastically reduced or eliminated. Audiences, for the most part home-bound, craved outlets for collective experience. As society raced to reorganize online, some enterprising artists began streaming performances on platforms such as Twitch, while ensembles experimented with music making on video conferencing platforms. Faced with problems such as latency, results were decidedly mixed. However, new potentials such as scalability, reach and discovery became apparent.

A second reason for recent widespread interest in live music performance in online spaces is Facebook founder Mark Zuckerberg’s rebranding of his company Meta in October 2021, which brought the term ‘metaverse’ into common parlance. This signalled a rush of venture capital into the space, as tech companies and brands jostled to establish a foothold in what was cleverly branded as the next iteration of the internet, ‘Web3’. Since these heady days, the emergence of headline-grabbing Artificial Intelligence models, and Zuckerberg’s own pivot towards investing in them, suggest that metaverse development may have passed the ‘Peak of Inflated Expectations’ and entered the ‘Trough of Disillusionment’ of the Gartner hype cycle of new technologies (for example, van Lente et al. 2013). However, enthusiasm for live virtual performances amongst developers, artists and audiences remains.

Heeding Francis Collins’ admonishment that ‘The First Law of Technology says we invariably overestimate the short-term impact of a truly transformational discovery, while underestimating its longer-term effects’ (Collins 2010), when we began our research in 2023, we sought to cut through the hype that existed at the time to understand what affordances musicians, intermediaries and audiences *actually* value, and why, focusing on the UK where we are based. For example, amidst the claims of millions of global attendees of Travis Scott and DJ Marshmello Fortnite events, how many UK residents might have attended? How well-established are such events? How viable will virtual events become as a commercial and social space?

This article therefore presents preliminary data collected from a survey of 1003 participants in the United Kingdom that we conducted in early 2023, through which we sought to understand how audiences currently interact with online live music performances and why. We also sought to understand if and how the consumption of live music performances in virtual worlds has changed because of the COVID-19 pandemic in the UK, and what the implications of this are. Although some parts of the live music business have recovered, other parts – perhaps most notably grassroots venues – continue to suffer. We suggest that our findings are therefore particularly (although not exclusively) relevant to

independent artists and venues. The first part of the article reviews the existing literature. The second part presents our methods and results. The final section summarizes the findings and outlines directions for future research.

Literature Review

Digital disruption has radically reorganized the sociality and economics of the music industries (Hughes et al. 2016; Johansson 2017), including live music (Cresswell-Jones and Bennett 2015). This is perhaps nowhere more apparent than at 'virtual' concerts in Massive Multiplayer Games such as Fortnite, in Virtual Reality platforms such as VRChat and in 'web 3.0' worlds such as Decentraland. While there have been some academic studies of concerts in Second Life (for example, Harvey 2016), research on performances in these next-generation platforms has only recently begun to emerge. We believe the primary reason for this relative paucity is that these platforms have only recently received more mainstream attention, and many still face challenges such as user adoption from both performers and audiences.

The survey discussed below contributes to research questions on music and technology situated at the nexus of several fields, including technology studies, (music) psychology, sociology, and a plethora of music studies sub-fields such as ludomusicology. This article contributes primarily to live music studies (for example, Anderton and Pisfil 2022; Burland and Pitts 2014; Cresswell-Jones and Bennett 2015; Frith 2015) and the cross-disciplinary literature which grapples with the effects of COVID-era restrictions on the music industries.

Several areas of focus within live music studies can be mapped on to the study of live music in virtual worlds, including (but not limited to): music festivals (for example, Hitters and Winter 2020); accessibility and safe spaces (for example, Hill et al. 2020); issues of value (for example, Behr et al. 2016); environmental cost (for example, Brennan 2021); and of course issues of 'liveness', especially co-presence, identity, and embodiment (for example, Fritsch and Strötgen 2012; Kent and Ellis 2015; Sanden 2012).

Live virtual music events, of course, predate COVID by more than a decade. Perhaps the first immersive environment to become widely known was Second Life, which launched in 2003 and achieved rapid growth during its first decade. Those first years saw some experimentation in music, especially in music education (for example, Schwartz 2009). Musicians also experimented with musical performance in Second Life. In 2012, the Second Life directory listed 144 music venues, including 25 live music venues, all but one of which was dedicated to popular music genres of some kind (Gértrudix & Gértrudix 2012: 179). Lüthy and Aucoeur (2013) suggested that opportunities for artists in the emerging 'micro-economy' of live performance in Second Life would be shaped by and pose challenges for content management and recommendation systems. More recently, Martín (2018), in her discussion of the Avatar Orchestra Metaverse, a 2007 collaboration between artists, composers, and musicians from North America and Europe in Second Life, suggested that 'disembodied' (in other words, avatar-based) musical collaborations in immersive environments afford attentive listening, which in turn has health and social benefits, including opportunities for group states of 'flow'.

Hill et al. (2014) have recorded the experiences of six musicians who performed in Second Life. They note that the platform hosts three basic kinds of live concerts: music streaming with avatar animation, video streaming, and multimedia, but focus on the first. They note that the live music scene in Second Life closely resembles that of the 'real world', as the venues, venue owners, managers, and performers all perform similar roles in both places. The economics of the Second Life music scene also resemble the real world: venue owners pay rent to Second Life's creators, Linden Labs, for their virtual plot of land, musicians may charge fees to perform, and musicians and managers advertise upcoming performances both within the platform as well as on social media (24).

The *Oxford Handbook of Music and Virtuality* (Whiteley and Rambarran 2016) includes a section on Second Life, but moves beyond this pioneering virtual world, and is perhaps the most comprehensive collection of essays on music and virtuality to date. With sections dedicated to pre-digital virtuality, vocaloids, holograms and other 'virtual' pop stars, creativity, communities, and sonic environments, the volume demonstrates the plethora of artistic, cultural, social, and economic aspects of virtual musicking. Debates about the 'liveness' of virtual events feature prominently in this and subsequent literature, leaning heavily on Auslander's (2008) exploration of the meaning of mediatized liveness, although there is not space here to unpack these. We adopt Moritzen's (2022) pragmatic definition of live musical performance from her study of music in MMO (Massive Multiplayer Online) game environments: 'live musical performance takes place when gamers gather simultaneously around an exhibition staged inside the game mechanics' (116).

Since 2020, a great deal of attention has been focused on the effect of COVID and COVID-era social restrictions on the audiences and performers in the live music sector of the music industries. Green (2023) notes that while the technological ability to run online music festivals predated the pandemic by at least a decade, COVID restrictions generated the material and social conditions for their genesis. In psychology, Onderdijk et al. (2021) explored how the differences in affordances of different kinds of livestreaming technology affected audience members' perceptions of social connectedness, while Fraser et al. (2021) analysed audience engagement with 'virtual' music collaborations broadcast on YouTube through the lens of ritual engagement with media events. A special issue of *The Journal of Music, Health, and Wellbeing* published 53 articles on the subject in a special issue (Williams et al. 2021). Importantly, several articles here focused on performers, both professional and amateur. A significant body of research focused on online musicking as a means of regulating mood and providing sociality (see Hansen et al. (2022) for an editorial introduction to the 45 articles published in *Frontiers* journals under the topic of 'The role of music during the COVID-19 pandemic', many of which focus on live online music-making and livestream attendance).

Other studies explored the economic effects of COVID on the music industry. Rothschild et al. (2020) highlighted the economic uncertainty of the live music industry throughout COVID through a discussion of concert organizers' decisions on whether to cancel, postpone, or reschedule gigs, as well as the issue of refunds. Anderton (2022) traced the impact of various international guidelines on live performance, and the strategies for monetizing digital live performances. Taylor et al. (2021) sought to understand how live music spaces, and people's perceptions of those spaces, changed once live music migrated

from in-person to online environments. Similarly, Mouillot (2022) examined how the pandemic's 'platformization' of the Hong Kong independent music scene both 'deterritorialized' and 'reterritorialized' it, and Arditì (2021) analysed the effect of COVID restrictions on the already precarious music workforce. Chen (2024) has documented Metaverse concerts and events of the K-Pop band Blackpink as an integral part of a successful marketing strategy aimed at expanding the band's global popularity.

Early reports on the impact of COVID on the music industry in the UK identify the value that audiences perceive in livestreams, including easier access and feelings of connection through 'liveness', and predict that livestream would persist beyond COVID, perceived as something different and new, compared to concerts, broadcasts or video on demand (Haferkorn et al. 2021a; 2021b). A report on the US entertainment industry anticipates permanent changes in audience preferences and behaviours, such as broadened tastes, increased willingness to experiment, and larger appetites for music (United Talent Agency 2021a; 2021b). Studies of post-COVID restriction audience behaviour have more recently begun to emerge. These tend to focus on predicting the duration or permanence of the impact COVID on the music industry or music consumption more generally. Many point out that COVID has whetted pre-existing appetites for alternative modes of musical experience (see, for example, Mantell et al. (2024)), and that even though there is strong appetite to return to live music venues, audiences also value alternative mediums of live music consumption. Wang and Limb (2024) explore the continued appeal of cinema livecast K-Pop concerts in mainland China as a supplement to in-person concerts, particularly for superfans unwilling to miss out on one-time-only experiences. Marinakou and Mathew (2025) find that attendees of hybrid post-COVID Coachella and Glastonbury festivals value personalised participation and the extended opportunity to engage beyond the event. Modestini and Weining (2025) situate a prerecorded concert, broadcast as a digital group event, as being experienced by audience members as related to previous experiences of music consumption, but offering value specifically related to their situational conditions (for example, ability to engage in parallel activity, comfort, accessibility). Tsalpara et al. (2021) observe livestreamed concerts as extending the reach of artists beyond a single venue but note the inability of the digital event to replicate the full social and somatic experience of an in-person event. This conclusion is, in fact, reached by several studies (see also Gligorijevic 2022; Luo et al 2022; Radermecker and Angelini 2024).

Phillips and Krause (2022; 2024) also acknowledge this apparent limitation, but compare motivations to attend in-person versus livestreamed performances pre-pandemic. They note overlap between some motivations for both modes of attendance (quality of the performer(s); having a sense of occasion), while identifying unique motivations for livestreamed responses (filling free time in a meaningful or enriching way; sound quality in the home environment). They pinpoint the advantages and disadvantages of each medium and conclude that the market for livestreamed experiences may thrive beyond COVID if attention is given to the particular motivations of livestream audiences. In our study, we wished to revisit these motivations and behaviours a year on after Phillips and Krause's research and expand the area of inquiry to include virtual events.

What the above review of the literature highlights, among other things, is that COVID-era restrictions drove a great deal of experimentation and adoption within the live music

industries of online and virtual live music. It also shows that the key conceit of the experience – that it is ‘live’ – is not only subjective but tied to the social and embodied affordances of technological mediation. Finally, it suggests that the affordances of these platforms, including Second Life and its antecedents, shape creativity, interaction, and experience in the environment.

The below study addresses the above by seeking to understand the specific affordances of virtual musicking that musicians, audiences, and intermediaries value, the extent to which live music events in online worlds are becoming established as part of the music industries, and the features that are likely to drive further adoption and innovation. In early 2023, we undertook an initial study focused on UK audiences of live online music events to map the demographics of participants, as well as some of their behaviours, attitudes, and experiences.

Methods

We conducted a two-part survey using mixed quantitative and qualitative questions. The first (henceforth ‘Live event survey’) was run between 30 January - 2 February 2023, recruiting 1003 participants via Prolific Academic, a crowdsourcing platform for academic research. We used Prolific’s ‘representative sample’ filter to collect a dataset representative of the UK population based on current UK census data on age, gender, and ethnicity. This brief survey, entitled ‘Live arts, culture, and entertainment events’, collected these key demographic details and asked respondents if they had attended these events within the previous five years in person, via livestream and virtually. We included not only music events, but also drama/theatre, dance, and poetry/spoken word in order to map musical participation within the wider ecosystem of cultural consumption. We also asked respondents to identify any digital platforms or devices through which they had attended these events, if they owned a virtual reality headset and if they played any kinds of computer games, including massive multiplayer online games. Respondents were asked if they were willing to take part in follow-up research, of whom 33% agreed. At this stage an initial high-level analysis of responses to individual questions was conducted in order to refine the questions for the follow-up survey.

The follow-up survey ran between 24 March and 5 May 2023, again via Prolific Academic. We extended the survey invitation to all willing Live event survey respondents who had attended a music event via livestream (205 respondents) and/or a virtual platform (93 respondents), a combined 271 respondents, receiving 196 responses. There were two sections to this survey. The first part explored what effect COVID restrictions on social gathering had on live music event attendance, and what proportions of participants actually took part in the proliferating livestream and virtual events during this period. Participants were asked to reflect on the frequency of their participation in live music events, comparing in-person, livestream and virtual attendance modes. Using an 11-point timescale, ranging between ‘never’ and ‘several times a day’, participants selected a frequency of attendance for the periods broadly related to the timeline of COVID restrictions in the UK: before COVID (roughly 2018 to early 2020), during COVID (roughly March 2020 to summer

2021), and after COVID (from roughly autumn 2021 to the time of completing the survey, early 2023). We also asked participants what types of digital devices they used to participate, the duration of their attendance (in other words, part or all of the event), and any changes to their interests regarding arts, culture, or entertainment events generally as a result of COVID restrictions. For those who had attended virtual events, the remainder of the survey focused on their attitudes to virtual events including reasons for attending virtually, costs to attend, their levels of enjoyment, and what they would most like to be able to do at a virtual music event.

Surveys were carried out with the ethical approval of the Royal Holloway, University of London ethics committee. After completion, the two anonymous datasets were joined via participants' unique identifiers, allowing us to explore demographic trends behind attendance rates and patterns across both surveys. We conducted a thematic analysis of open-ended questions and worked with a research assistant with expertise in statistical analysis methods to determine the statistical significance and validity of survey results.

Because of the variety of experiences afforded by different technologies within the metaverse, particularly relating to the level of immersiveness, we differentiated between 'livestream' and 'virtual' attendance. Livestream events were those experienced on streaming platforms such as YouTube or Twitch, or video conferencing platforms such as Zoom. We specified that the event was not recorded (in other words, both the performer and the audience were inhabiting the same temporal space). Crucially, audience members may have interacted with the performer or other audience members through chat, but they could not navigate or be present in the virtual space – they were more observers than participants. Virtual events were those in which audiences were present in a computer-generated or digital space, including VR spaces such as VRChat or MMO/virtual world spaces such as Decentraland or Fortnite, with the performers or their avatars. Audience members may have had avatars themselves, with which they were able to move around the space. We also stipulated that the event was not a recorded event, that it was occurring in real time; however, given that many music events taking place on these platforms were streaming pre-recorded video or running pre-programmed avatars and media within game engine environments, participants did not make this distinction, instead reporting based on their perception of a subjective sense of liveness organized around a simultaneously experienced event.

Results

The Live event survey showed clearly that music leads the live events industry in penetration, with 72% of respondents indicating they had attended a music event in person in the previous five years, 30% indicating livestream attendance, and 10% indicating virtual attendance. By comparison, despite some high-profile digital interventions in recent years, drama/theatre, the next most-attended type of live event, was attended by 52% of respondents in person, 12% via livestream, and only 3% virtually. Looking in more detail at the demographics of live music event attendance, three main variables seem linked to attendance – age, gender, and frequency of gameplay.

Age

A downward trend in attendance of live music events as age increases was evident across all modes of attendance, with in-person attendance peaking at a rate of 82% for 18-24 year olds, steadily decreasing to 57% for those aged 65 and older. Similarly, 45% of 18-24 year olds reported attending livestream events, compared with 23% of those aged 55-64 and 26% of those aged 65+ (this slightly higher rate of livestream participation for 65+ adults compared with the 55-64 age group was unique for livestream attendance). Finally, virtual attendance was dominated by younger age groups, with 23% of 18-24 year olds reporting having attended virtually compared with 13% of 25-34 year olds, 9% of 35-44 year olds, 10% of 45-54 year olds, 7% of 55-64 year olds, and 3% of those aged 65+.

Gender

The Live events survey revealed that gender plays an important role in attendance of live music events. In person, this effect was non-significant, but 36% of males attended livestream events compared to 25% of women, and 14% of males attended virtual events compared to 7% of females. (1)

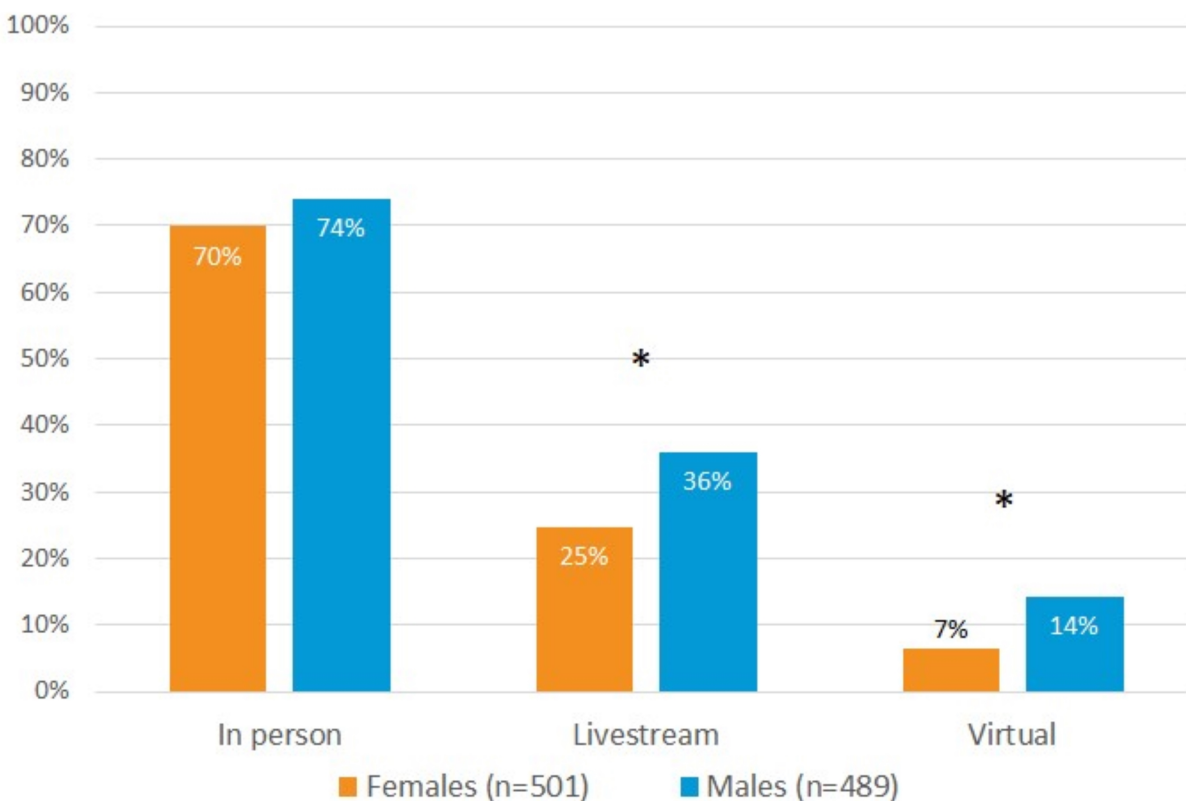


FIGURE 1. Attendance of live music events, by gender (Live events survey, n=1003, *=p<.05).

Frequency of gameplay

Gameplay frequency has a significant impact on both livestream and virtual attendance: participants who responded that they played any type of video games, including mobile games, console- or PC-based games, VR games, and MMO games, attended livestream and virtual music more than people who never play any type of games. The strongest correlation, however, is between people who play VR or MMO games. There is a significant association between playing behaviour and attendance of livestream music events: those who play any types of games attend livestream music events more than those who do not. For example, those who *frequently* play MMO games have attended music events via livestream 2.5 times as much as those who do not game, and those who occasionally play VR games have attended livestream events over two times as much as non-gamers.

For virtual music events, the effect is even more pronounced. People who frequently play VR and MMO games attended virtual music events approximately four times as much as non-gamers.

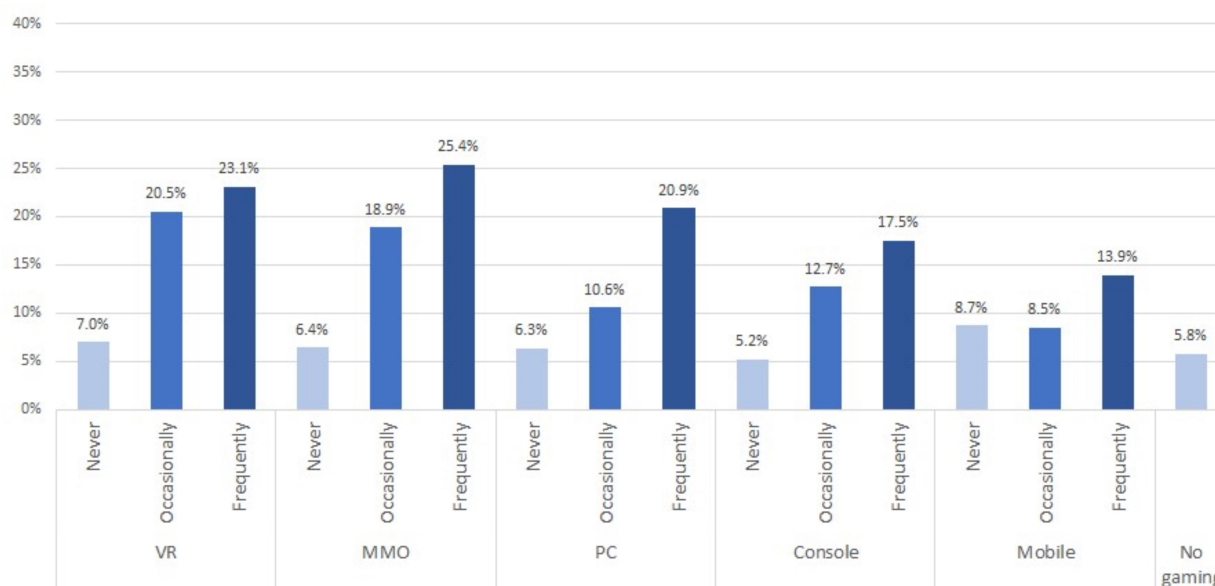


FIGURE 2. Virtual music event attendance by frequency and type of gameplay (Live events survey, n=1003). Percentages refer to the total number of people who said they played each gaming type, regardless of virtual music event attendance ($p < .001$ for all types of play apart from mobile, $p = .036$).

Other demographic attributes

From the Live events survey, the examination of two additional factors provided weak or inconclusive results that require further examination. We explored the role of ethnicity as a

relevant variable in virtual event attendance, but there was no significant effect. Here, however, our methodology limits conclusions, as our sample, which was statistically representative of the UK population, drew too few responses from global majority ethnicities for this analysis. We also asked participants whether they had any long-standing illness, disability, or injury which limits their day-to-day activity, to explore whether remote modes of attendance provided any benefits to those who might find in person attendance difficult. These results were more ambivalent, with only a slight, non-significant effect on virtual attendance, but nonetheless merit further consideration, as we discuss below. Again, a broader sample that invites more representation from people with disabilities may provide more robust data.

Enjoyment of virtual events

In the follow-up survey, we asked those who had attended virtual events to indicate on average how much they enjoyed the experience. 65% of those who attended virtual events rated them 4 or 5 stars, with only 10% indicating they did not enjoy them (1 or 2 stars) and 26% feeling neutral about them (3 stars). We also asked them to indicate the significance of a randomised list of possible reasons for attending virtual concerts, rating each as 'not at all important' (yielding the value 0), somewhat important (yielding the value 1), or very important (yielding the value 2). Totalling the values given, Table 1 represents responses in order of relevance according to the overall total:

TABLE 1. Reasons provided by respondents for livestream or virtual music attendance.

Reason (196 respondents)	Category	Somewhat important	Very important	Total
It was a performer/group I had been wanting to see perform live	Practical	78	89	167
Because the concert is too far away to attend in person	Practical	71	94	165
Concert tickets are free or cheap	Practical	78	86	164
Discovering new music	Experiential	117	31	148
Not having to leave home	Practical	100	47	147
Avoiding a crowded concert venue	Practical	83	58	141
Accessibility reasons (it's difficult to travel to or attend live events)	Practical	79	50	129
Being part of something unique	Experiential	93	34	127
Sharing the experience with friends or family members (together in the same physical space with you)	Experiential	92	22	114
Sustainability reasons (cutting down on travel)	Practical	73	38	111
Being up close to the performer	Experiential	83	27	110
Feeling a togetherness with the artist(s)	Experiential	76	26	102
Moving around physically during the concert	Experiential	76	22	98

Reason (196 respondents)	Category	Somewhat important	Very important	Total
Sharing the experience with friends or family members virtually (not in the same location as you)	Experiential	76	20	96
Not having to be quiet for others during the concert	Experiential	57	33	90
Connecting with people from all over the world	Experiential	60	17	77
Moving around in the virtual space during the concert	Experiential	48	12	60
Interacting virtually with others in the live audience at the venue	Experiential	37	9	46
Interacting with others in the virtual audience	Experiential	39	5	44

Participants were also able to submit ‘other’ reasons beyond the list presented, not factored into the responses above. Some elaborated upon or reinforced reasons already presented in the list, but five people mentioned the ability to control the view (closeups, camera angles) and five mentioned the ability to interact in some way with the artists (requests, Q&A). The researchers categorised the ranked reasons post-hoc as ‘practical reasons’ (not directly due to the experience itself) or ‘experiential reasons’ (to do with their direct experience within the musical event). Overall, practical reasons for attendance still dominate – geography, cost of tickets, avoiding crowds, and watching from home. These parallel with several of the themes that Phillips and Krause (2024) found audiences identifying as advantages of livestreamed attendance. Apart from seeing a performer they had been wanting to see perform live, experiential reasons such as being part of something unique, being up close to the performer, or sharing the experience with people virtually or in the room fall further down the list, with the desire for interaction falling to the bottom of the list. It may be that reflected in these lower experiential motivations are some of the disadvantages of livestream found in Phillips and Krause’s study – the lack of atmosphere, physicality, sociality, emotional response, and sense of occasion. It is also worth noting that this aligns with a study by Onderdijk et al. (2023) in which social motivations for attendance were lower for VR performances, whereas seeing specific artists perform and having a unique experience were highest. This suggests that the capacity for imagining a different kind of mode of attendance – more participatory, less observational – has not to this point been a primary driver for attendance.

COVID effects on frequency of attendance

Calculating the average frequency of attendance before, during, and after COVID restrictions, there is clear evidence of the crash in live event attendance during COVID restrictions and a corresponding uptick in livestream and virtual attendance, as would be expected. However, comparing ‘before’ and ‘after’, our results also demonstrate a statistically significant difference between pre- and post-COVID attendance: participants are still attending fewer in-person events than before COVID, and more livestream and virtual events than before COVID. Figure 3 demonstrates these trends, with black bars representing the overall average of responses; the coloured dots represent the range and intensity of responses, with the size of dots corresponding with the number of responses.

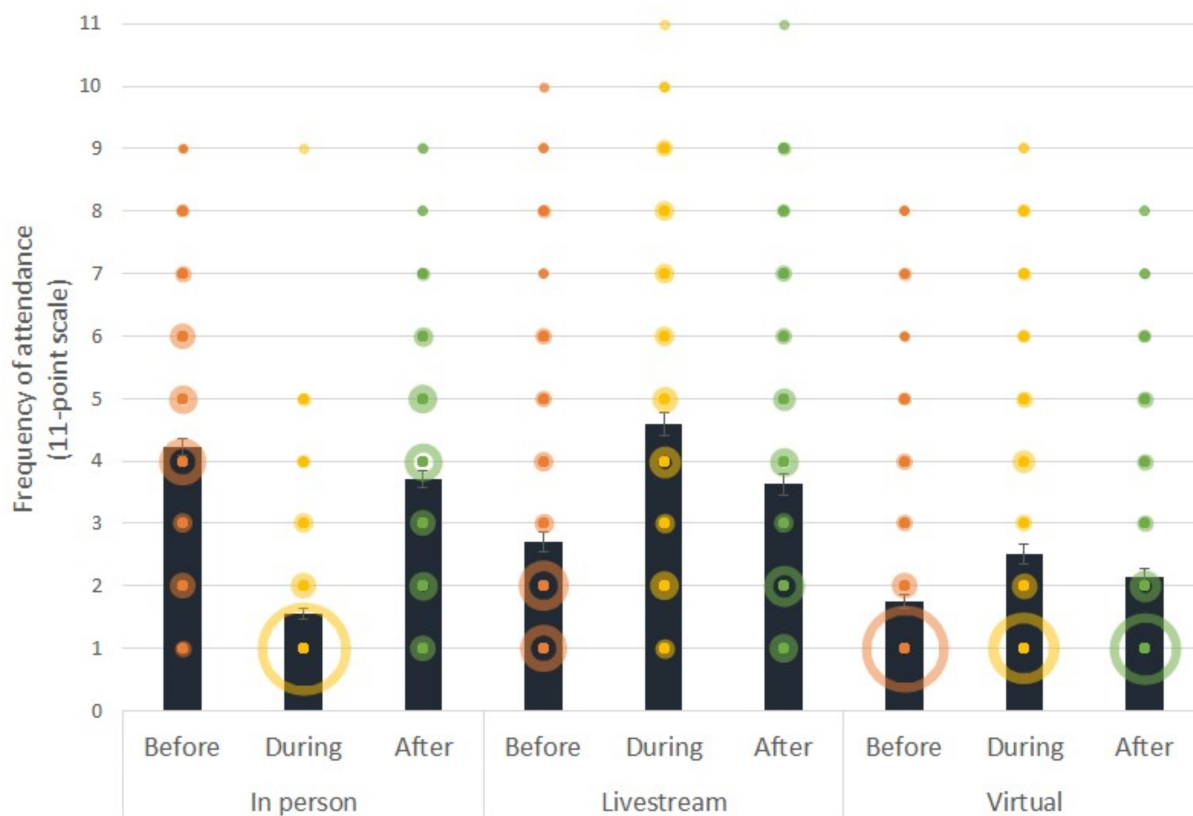


FIGURE 3. Frequency of attendance of live music events before, during and after Covid restrictions, by attendance mode (Follow up survey, n=171, all results = $p < .05$).

It is worth noting that the purpose of this instrument, with its 11-point scale of frequency of attendance, was not to capture an absolute number of events respondents attended during these three time periods, but rather to give them an opportunity to reflect retrospectively and choose numbers that reflected their experience. Focusing on virtual attendance alone, and looking at the trends on an individual level, a slight majority of people (46%) reported attending more virtual music events after COVID than before, while 41% have the same level of attendance before and after COVID. A small number of respondents, roughly 13%, reported attending fewer virtual events after COVID. Overall, it seems that the COVID effect may still be contributing to decreased in-person attendance and increased virtual/livestream attendance for many people, although there is evidence that other factors (discussed below) are also playing a role. In other words, this period of livestream and virtual music experimentation seems to have had a strong effect on the majority of people who attend virtual events more than pre-COVID but represented a period of abnormality for a large group who have since returned to their norm. Alongside these is a small group of people who seem to have reduced interest in live virtual music events. Whereas Phillips and Krause's (2022) study predicted that interest in livestream would fall greatly after COVID, our study shows that attendance of both livestream and virtual music events, while less

frequent than during COVID, play a greater role in many respondents' lives than before COVID.

Effect of COVID on interests and behaviours

Respondents to our study reported that, after COVID, people still value in-person music events. The characterisation of livestream or virtual concerts as 'abnormal' noted above is evident in some responses: 'Basically [digital attendance was] always a second choice due not to being able to attend live. Getting out of the house is actually one of the pleasures of a live event. Also being noisy, moving and dancing WITH real life people' (female respondent, 45-54, livestream attendee).

However, a significant proportion of respondents saw the new modes of concert attendance that emerged during the pandemic as opportunities to discover and explore new artists and styles of music, or to reconnect with interests. The reasons behind this new or rediscovered attitude towards musical exploration were myriad, including that the lockdown gave them more time to explore, more content was being produced for online consumption, and they needed to adopt new platforms or formats (for example, Zoom) for other uses such as work anyway. While those reasons are perhaps expected, other less expected reasons were also given, for example that changes to households or social groups during the COVID lockdown (such as in-laws moving in or couples splitting up) introduced new musics or left people with more time to explore. This theme of exploration and discovery will be discussed in the following section.

Motivation for livestream and virtual attendance

As seen above in frequency of attendance, although restrictions related to the COVID pandemic have been removed, overall levels of in-person concert attendance have not returned to pre-COVID levels, and livestream/virtual attendance remains higher than pre-COVID. We asked participants to identify their motivations for continued livestream or virtual attendance. As the motivations for livestream or virtual attendance often overlap, in this study we considered them together. Many respondents pointed to the dual economic shocks of the 'cost of living and expense of seeing live events' (male respondent, 55-64, virtual attendee). One virtual attendee's comment elaborated on these and other, more complex politico-economic reasons, beyond COVID, for limitations on their entertainment budget:

I think I'd have to cite the Tory Cost of Living Crisis (2) as a reason for attending fewer concerts & cultural events in person. While we are not struggling with our household budget & are in a better position than many, we are definitely making more cautious choices with our discretionary spending. Once parking & petrol have been factored into attending a concert or theatre event on top of food, drinks & tickets, it is often more money than we find ourselves wanting to spend. This is not in any way because we think the arts event itself isn't worth the money, far from it, rather that essentials such as food, bills & energy costs have rocketed & we are thus spending less on non-essentials (female respondent, 55-64, virtual attendee).

Related to this, other respondents noted that they are not only more open minded about livestream/virtual performances having tried them, but also that the relatively low investment of time and money needed to attend these concerts means that they are more willing to experiment on lesser-known or unknown artists or genres than they otherwise would be: 'Someone used Zoom and had a virtual DnB [drum and bass] concert which made me start to really enjoy that genre of music' (male respondent, 18-24, livestream and virtual attendee). Others were keen enough for live music that they attended the events of artists or styles outside their usual interest area, such as this livestream attendee:

Some I'm not into enough to actually pay for tickets and travel to see them, but I am interested in what they are like live. I watched Sam Smith at the Royal Albert Hall, again, I don't like him enough to pay or travel to see him, however it was quite a good performance though not my style of music (female respondent, 45-54, livestream attendee).

Others noted that their entertainment preferences had permanently shifted: 'COVID was a time to reset hobbies and pastimes. I have [moved] from crowds to quieter outdoor activities during this time and carried on' (male respondent, 45-54, virtual and livestream attendee).

Several respondents focused on the convenience of home attendance. They noted that, as well as the fact that online concert attendance was less expensive than in-person attendance, not having to travel to concerts meant that they could attend more of them. For example, one livestream attendee respondent noted that he

... realised there are a lot of events online you can attend and enjoy and I am not as keen to go to live events because of cost and crowds. I have discovered cultural interests in other parts of the world online I knew little about before the pandemic. I suppose I have a broader interest than a narrow western view of the arts and culture (male respondent, 55-64, livestream attendee).

Respondents also noted that attending online concerts from home meant that they could better fulfil family commitments such as caring responsibilities. Some wrote that, for reasons of physical or mental health, they preferred online concerts. Others responded that, because of COVID, they were still nervous about crowds and therefore preferred online offerings. These financial and health concerns of COVID often came together: 'Partly I've developed an anxiety about being in crowded areas, especially indoors. Another aspect is that the COVID lockdown affected me quite severely in financial terms, and so I've had less opportunity to attend events since then' (male respondent, 25-34, livestream and virtual attendee).

It is worth noting that although accessibility did not show up in our initial survey as a statistically significant motivator for virtual attendance in the quantitative analysis, improved quality of virtual experiences might make these a more enjoyable or meaningful alternative to in-person events, providing an experience that does not feel like second best: one respondent wrote that the thing he liked the least about virtual events was 'the limitations;

knowing that those who are there live can interact better with the experience' (male respondent, 35-44, with a disability, virtual attendee).

Value of livestream or virtual concerts

The last questions were about the affordances of livestream or virtual concerts that people valued. The answers primarily centred on control. One recurring response was that respondents enjoyed the ways that livestream/virtual attendance allowed a different kind of interaction in the performance. They valued, for example, always having a 'front row seat', being able to make requests and being able to interact with the artist during the question and answer sessions that some events included: 'It was an artist performing new songs from his latest album. It felt up-close and made for me' (male respondent, 18-24, livestream and virtual attendee). Respondents similarly valued the ways online concerts afforded inter-audience interaction, for example community engagement and real-time interaction via chat features, although notably, one respondent noted that he strongly disliked 'a virtual screening of a concert where expectations of interactions with others was the norm and I find that uncomfortable' (male respondent, 18-24, with a disability, livestream and virtual attendee); meanwhile, another noted that he strongly disliked 'people spamming the chat' (male respondent, 25-34, livestream attendee). Several mentioned they liked the ability to control the timeframe of their engagement, attending just part of an event, not needing to spend time traveling to the event, and in some cases being able to pause and return to the event.

Finally, several respondents commented that they valued the ways online concerts afford them control of their environment. For example, respondents valued being able to control their viewpoint, especially within avatar-based metaverse environments; others suggested they would like to be able to swap their view between artists on different stages in a digital festival (male respondent, 45-54, virtual attendee). They commented that online concerts (excluding those streamed on Zoom, etc.) sometimes had better sound than many in-person performances, and appreciated the enhanced visual effects some online performances offer: 'Some of the Fortnite events are pretty decent and probably the most enjoyable, the atmosphere is amazing and the graphical effects are just top notch and since the headphones I have, have some amazing sound quality it's pretty fun' (male respondent, 18-24, livestream and virtual attendee).

Others indicated a desire to escape some of the environmental issues of in-person performances they deemed undesirable, primarily 'other club-goers' (male, 35-44, livestream attendee) and 'other people filming on their phones' (female respondent, 25-34, livestream attendee). Alongside a number of respondents who wanted to be able to sing along in the privacy of their homes, a respondent from the ethnic global majority also said virtual events provided the 'ability to be free while I watch, safe' (male, 35-44, virtual attendee), hinting at some of the safety issues that exist in live music events that may be avoided by attending digitally: something which Hill and Megson (2022) point out is salient for people of various marginalized identities, with digital events offering greater embodied freedom, and pointing to the need for change in live in-person events.

Asking what they aspired to be able to do in virtual events, responses followed in similar lines to the things participants had indicated they value, with continued emphasis on convenience, access to artists, cost, discovery, and control and customisation of the experience, often in terms of having an undisturbed or introverted experience. However, thinking about desired future events did elicit consideration of the types of interactivity they would value. Several mentioned live chat with other attendees, but mainly they seek interactivity with the artists, a few expressing a desire to play along with the performer, make a request, to see lyrics so they could sing along. A few mentioned the desire for temporal interactivity, with the ability to record the best moments or pause the event. Finally, several sought enhanced physical possibilities – dancing, singing aloud (possibly with lyrics displayed) and moving within a virtual space.

Emerging Themes and Future Research

The results of the Live music survey and its follow-up indicate the level of participation in virtual music events as of early 2023, a time influenced by the cultural interruption of COVID and a corresponding shift in digital consumption of live music. At the time of data collection, the fact that attendance levels at livestream and virtual music events were higher than pre-COVID, and attendance at in-person events had not yet returned to pre-COVID levels, presented an important opportunity to consider how these three modes of attendance exist in relation to each other. In the UK at least, these trends seem to have taken hold. Attendance at top-level concert events such as the Taylor Swift *Eras* tour has rebounded. However, the average ticket price of these mega-events has skyrocketed, precluding attendance for many. Furthermore, venues below the level of arenas – especially grassroots venues – have struggled to return to profitability (Music Venue Trust 2024), and younger people in particular are attending fewer live music events (LIVE 2024). Finally, Brexit and the cost of living crisis have made touring more costly, and therefore unworkable, for many U.K.-based musicians (Wray 2024).

While this article has mainly focused on audiences, the implication of this research for (especially independent) artists and intermediaries is that there is an opportunity to be seized. Understanding when and why people wish to attend performances in person, and how they wish to engage when they are attending virtually, will be key to identifying opportunities to attract new audiences, new types of performance and new revenue streams. In the above research, three key themes emerge that both provide balance against some of the ‘hype’ on virtual events and point to fruitful directions for future development in the sector. Having considered the experiences of those who attended both livestream and virtual events, we apply these findings here to the future of virtual events, in response to our initial interest. Several of these themes may bear relevance for livestreaming and other types of digital experience, but we focus on virtual events as a new area of research.

First, the discoverability of events may presently be limited by several factors. The numbers of people attending virtual events, considering the technological capabilities they currently require, are not insignificant, but the demographics of the audience is still rather narrow. While younger, male gaming audiences are by no means the only attendees, they are still the largest demographic. Therefore, from the perspective of artists wishing to engage

existing fans, it is uncertain what proportion of platform users are preexisting fans, and how many existing music fans who are *not* regular platform users manage to attend: platforms may themselves present barriers to non-users in terms of accessibility of virtual events. Future research on platform collaborations, based on these considerations, would be valuable. In terms of gaining new fans, several respondents mentioned seeing previously unknown artists simply because they were able to attend the event; low-friction ways of attending virtual events combined with their convenience, low time commitment and low cost are important gateways to attendance, and the appetite for live music seems to trump familiarity with the artist or even the genre. Combined with a cost of living crisis, the rising ticket prices of increasingly spectacular live music events as part of an emerging live music 'experience economy' (Zhang and Negus 2021: 543) present a real barrier to many people. The chance to attend live performances by acts they know and like, with fanbases beyond the youngest demographics, may provide welcome opportunities to engage with live music that have slipped away from many in recent years. Nonetheless, looking at the overall decline of live music event attendance as people get older, opportunities for growth clearly sit with younger audiences.

Second, control is an important feature of virtual music attendance. People conceive of this type of interaction as offering them more control over their environment, giving them an opportunity to present themselves and to interact (or not) as they wish. Although virtual events were on the rise before COVID, the push to the virtual that many experienced during COVID has offered them a new kind experience and allowed them to discover an alternative to the unpredictability of live in-person attendance. Present in the responses about what audiences value about live virtual events is their distaste for the unsatisfactory elements of in-person events: disruptive audience members whose idea of an enjoyable concert experience conflicts with one's own; sound levels and viewpoints that are less than ideal; constraints on one's own movement or participation; at times lack of safety and lack of accessibility. There is a tension between those who seek to simulate a real concert and those who seek to have a better-than-real concert. From this study, it seems that allowing audiences customisation and control will offer many a live music experience that is closer to their personal ideal.

Third, the aspirations of audiences regarding virtual events are at present quite limited. They frame the value of these events mainly in relation to their concept of in-person attendance, focused mainly on passive ways of participating. We suggest that this is due more to a lack of understanding of the possibilities and the limited exposure to virtuality that people have had to date than to a lack of aptitude for participating in or enjoying virtual events. The early days of live virtual music events have been dominated – in discourse, if not in actuality – by artists with the management teams and funding behind them to create big-ticket events open to the thousands. This seems to have worked to constrain audiences' imagination of what a metaverse music experience might offer them; the interactive and economic prospects of the metaverse do not, so far, offer value matching their needs and interests. Given the enthusiasm for discovering new acts, platforms that offer a model whereby independent and amateur acts can easily discover and attend live virtual performances may be the key to helping audiences discover and value new kinds of musical experience. Additionally, if virtual events are framed not as substitutes for in-person events,

but rather as available alternatives or supplements, as recent research suggests (Chen 2024; Luo et al 2022; Marinakou and Mathew 2025; Modestini and Weining 2025; Wang and Limb 2024), they may provide additional value to audiences as new opportunities for consumption and fandom.

As metaverse platforms continue to develop and more artists are drawn into virtual performance modes, whether these are alongside, in addition to or instead of existing performance modes, it will be worth monitoring the levels of attendance and the characteristics of audiences attending. A turn to more personalized, convenient and managed musical experience may be a lingering effect of COVID and anxieties or ambivalence about crowds; repeating this survey now that further time has passed would provide an interesting insight into live music as a potential bellwether of broader social change.

Future research is needed to contextualise audience experience in virtual events within a range of digital, remote or imaginary musical experiences (such as musical holograms and vocaloids (Chang and Shin 2019; Matthews and Nairn 2023; Michaud 2022; Zaborowski 2016), video games (for example, Kamp 2021; Tonelli 2021) or role-play (Miller 2009; DUBY 2019). Such research might monitor the affordances of virtual events, the extent to which audiences respond to new kinds of musical experience, and whether their values change. Looking at values more broadly, will these events demonstrate the oft-lauded potential of the metaverse for decentralization and democracy, successfully offering inclusive experiences regardless of ethnicity, economic status or disability? It would also be worthwhile considering these events in a global context: will the ability to perform in virtual spaces become easier and lower cost for artists, and align with audiences' desire to discover new music?

Study of the economics of virtual events is also needed. With many virtual events currently accessible at low or no cost, will artists and their management teams explore ways to introduce revenue streams and a corresponding scarcity for higher levels of interaction or access? Do inexpensive or free events act as a loss leader, and if so, what will be the timeline of change in audiences' willingness to pay? Will this align with their present values, or do audiences need to experience new kinds of virtuality to understand the value proposition?

Finally, virtual events in the metaverse will continue to challenge questions of liveness as temporal and spatial interactions become more layered, disrupted, and personalizable. What opportunities and challenges will these present to artists? What creative skills and technical abilities will metaverse musicians need, and how different will their careers look from the careers of performers and touring musicians today? The post-COVID period of receptivity for live virtual music may offer the very concept of the 'metaverse' itself one path out of the 'trough of disillusionment', towards the 'slope of enlightenment' (van Lente et al. 2013), providing audiences experiences of music that they seek out and value.

Endnotes

- (1) Note that due to the statistically representative sample, there were insufficient numbers of responses from participants with non-binary or other gender identities for a reliable analysis.

- (2) This participant's comment reflects an issue prevalent in media at the time the survey was conducted about the rise in the household cost of living, frequently attributed to the costs of Covid and the Russian invasion of Ukraine (see, for example, BBC Newsround 2022). Opposition political parties also frequently characterised this crisis as the result of austerity budgets implemented by the UK government led by the Conservative (Tory) party since 2010 as a minority coalition and since 2015 as a majority government.

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Data availability

Data are available via OSF from: <https://osf.io/btw4c/>.

References

- Anderton, C. 2022. Disruption and Continuity: COVID-19, Live Music, and Cyclic Sociality. In Anderton, C. and Pisfil, S. Eds. *Researching Live Music: Gigs, Tours, Concerts and Festivals*. Abingdon, Oxon: Routledge: 68-83.
- Anderton, C. and Pisfil, S. Eds. 2022. *Researching Live Music: Gigs, Tours, Concerts and Festivals*. Abingdon, Oxon: Routledge.
- Arditi, D. M. 2021. Precarious Labor in COVID Times: The Case of Musicians. *Fast Capitalism* 18 (1): 13-25.
<https://fastcapitalism.journal.library.uta.edu/index.php/fastcapitalism/article/view/412>.
Accessed: 14: August 2023.
- Auslander, P. 2008. *Liveness: Performance in a Mediatized Culture* (2nd edition). London: Routledge.
- BBC Newsround 2022. Cost of Living Crisis: What is it and when will it end? *BBC Newsround*, 26 Aug. Available at: <https://www.bbc.com/newsround/68370090>.
Accessed 5 March 2025.
- Behr, A., Brennan, M., Cloonan, M., Frith, S., and Webster, E. 2016. Live Concert Performance: An Ecological Approach. *Rock Music Studies* 3 (1): 5-23.
<https://doi.org/10.1080/19401159.2015.1125633>
- Brennan, M. 2021. The Infrastructure and Environmental Consequences of Live Music. In K. Devine and A. Boudreault-Fournier Eds. *Audible Infrastructures: Music, Sound, Media*. Oxford: Oxford University Press: 117-134.
<https://doi.org/10.1093/oso/9780190932633.003.0006>
- Burland, K. and Pitts, S. 2014. *Coughing and Clapping: Investigating Audience Experience*. Oxford: Taylor & Francis Group.

- Chang, W. and Shin, H. -D. 2019. Virtual Experience in the Performing Arts: K-Live Hologram Music Concerts. *Popular Entertainment Studies* 10 (1-2): 34-50.
- Chen, S. 2024. The Fifth Mode of Entry: The Metaverse and the Case of Blackpink's 'Born Pink'. *Journal of Marketing Management* 40 (15-16): 1491-1512. Available at: <https://www.tandfonline.com/doi/abs/10.1080/0267257X.2024.2431095>. Accessed 21 November 2024.
- Collins, F. 2010. Has the Revolution Arrived? *Nature* 464 (7289): 674-675. <https://doi.org/10.1038/464674a>
- Cresswell-Jones, A. and Bennett, R. J. Eds. 2015. *The Digital Evolution of Live Music*. Oxford: Chandos Publishing.
- Duby, M. 2019. Affordances in Real, Virtual, and Imaginary Musical Performance. In M. Grimshaw-Aagaard, M. Walther-Hansen, and M. Knakkegaard Eds. *The Oxford Handbook of Sound and Imagination*. Oxford: Oxford University Press: 96-114. <https://doi.org/10.1093/oxfordhb/9780190460242.013.70>
- Fraser, T., Croke, A. H. D., and Davidson, J. W. 2021. 'Music Has No Borders': An Exploratory Study of Audience Engagement With YouTube Music Broadcasts During COVID-19 Lockdown, 2020. *Frontiers in Psychology* 12: Online. <https://doi.org/10.3389/fpsyg.2021.643893>
- Frith, S., 2015. Live Music. In J. Shepard and K. Devine Eds. *The Routledge Reader on the Sociology of Music*: 269-276. New York: Routledge.
- Fritsch, M. and Strötgen, S. 2012. Relatively Live: How to Identify Live Music Performances. *Music and the Moving Image* 5 (1): 47-66. <https://doi.org/10.5406/musimoviimag.5.1.0047>
- Gértrudix, F. and Gértrudix, M. 2012. Music in Virtual Worlds: Study on the Representation Spaces. *Comunicar: Revista Científica de Comunicación y Educación* 19 (38): 175-181. <https://doi.org/10.3916/C38-2012-03-09>
- Gligorijevic, J. 2022. A Place Outside the Pandemic?: An Ethnographic Study of Live Music Events at St Gallen's Cultural Venue Palace During the COVID-19 Crisis. *Popular Music* 41 (2): 216-237. <https://doi.org/10.1017/S0261143022000265>
- Green, B. 2023. Splendour XR: Place, Experience and Liveness at a Virtual Music Festival. *Leisure Sciences* 47 (5): 958-975. <https://doi.org/10.1080/01490400.2023.2171519>
- Haferkorn, J., Kavanagh, B. and Leak, S.–
 2021a. *Livestreaming Music in the UK: Quantitative Analysis*. Available at: <https://livestreamingmusic.uk/wp-content/uploads/2021/05/Quantitative-Analysis.pdf>. Accessed 27 February 2025.
 2021b. *Livestreaming Music in the UK: Report for Musicians*. Middlesex University. Available at: https://mdx.figshare.com/articles/online_resource/Livestreaming_Music_in_the_UK_-_Report_for_Musicians/14974092/1. Accessed 27 February 2025.
- Hansen, N. Chr., Wald-Fuhrmann, M., and Davidson, J. W. 2022. Editorial: Social Convergence in Times of Spatial Distancing: The Role of Music During the COVID-19 Pandemic. *Frontiers in Psychology* 13: Online. <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.910101>

- Harvey, T. S. 2016. Avatar Rockstars: Constructing Musical Personae in Virtual Worlds. In S. Whiteley and S. Rambarran Eds. *The Oxford Handbook of Music and Virtuality*. Oxford Handbooks. New York, NY: Oxford University Press: 171-190.
- Hesmondhalgh, D. and Meier, L. M. 2018. What the Digitalisation of Music Tells Us About Capitalism, Culture and the Power of the Information Technology Sector. *Information, Communication & Society* 21 (11): 1555-1570. <https://doi.org/10.1080/1369118X.2017.1340498>
- Hill, M., Hartshorne, S., and Jacka, L. 2014. Live Music Performance in Virtual Worlds: Six Musicians' Experiences. In J. O'Regan and T. Wren Eds. *Communities, Places, Ecologies: Proceedings of the 2013 IASPM-ANZ Conference, Gold Coast, Qld*: 23-31. <https://www.semanticscholar.org/paper/Live-music-performance-in-virtual-worlds%3A-Six-Hill-Hartshorne/af22dac83e0a65f6e628cb87648e3d9f8024db33>. Accessed: 15 August 2023.
- Hill, R. L., Hesmondhalgh, D., and Megson, M. 2020. Sexual Violence at Live Music Events: Experiences, Responses and Prevention. *International Journal of Cultural Studies* 23 (30): 368-384. <https://doi.org/10.1177/1367877919891730>
- Hill, R. L. and Megson, M. 2022. The Cyborg in the Audience: Audience Experiences of Livestreamed Gigs. Presented at the Internet Musicking Conference, University College Cork, Ireland, 30 May 2022. <https://www.youtube.com/watch?v=mWeota3T0TE>. Accessed: 28 July 2022.
- Hitters, E. and Winter, C. Eds. 2020. *International Journal of Music Business Research*. *Music Business Research* 9 (2). <https://musicbusinessresearch.wordpress.com/2020/10/30/international-journal-of-music-business-research-october-2020-vol-9-no-2/>. Accessed: 14 August 2023.
- Hughes, D., Evans, M., Morrow, G., and Keith, S. 2016. *The New Music Industries: Disruption and Discovery*. Cham, Switzerland: Palgrave Macmillan.
- Johansson, S., Werner, A., Åker, P., and Goldenzwaig, G. 2017. *Streaming Music: Practices, Media, Cultures*. London: Routledge.
- Kamp, M., 2021. Old(er) Media and New Musical Affordances in Virtual Reality Experiences. In C. Cenciarelli Ed. *The Oxford Handbook of Cinematic Listening*. Oxford: Oxford University Press: 712-736.
- Kent, M. and Ellis, K. 2015. Disability at the Wheelies Nightclub in Second Life. In A. Cresswell-Jones and R. J. Bennett Eds. *The Digital Evolution of Live Music*. Oxford: Chandos Publishing: 85-98.
- LIVE 2024. *LIVE Insights: Deep Dive into Audience Trends*. LIVE (Live Music Industry Venues and Entertainment). Available at: <https://livemusic.biz/news/live-publishes-updated-audience-research>. Accessed 10 September 2024.
- Luo, Q., Hu, S., and Guo, Y. 2022. 'Right Here, Right Now!': Embodied Experiences of Pop Concert Participants. *Current Issues in Tourism*, 25 (17): 2838-2853. <https://doi.org/10.1080/13683500.2021.1997941>
- Lüthy, M. and Aucouturier, J. -J. 2013. Content Management for the Live Music Industry in Virtual Worlds: Challenges and Opportunities. *Journal For Virtual Worlds Research* 6 (2): Online. <https://doi.org/10.4101/jvwr.v6i2.5958>

- Mantell, O., Torreggiani, A., Walmsley, B., Kidd, J., and McAvoy, E. N. 2024. The Same People Seeing More: Audiences' Engagement with Culture During the COVID-19 Pandemic. In A. Gilmore, D. O'Brien, and B. Walmsley Eds. *Pandemic Culture*. Manchester: Manchester University Press: 95-117. Available at: <https://www.manchesterhive.com/display/9781526168375/9781526168375.00012.xml>. Accessed 25 February 2025.
- Marinakou, E. and Mathew, A. 2025. Hybrid Festival Visitors Experience Using the Event Experience Theory in the Post COVID Era. *Event Management*. Online. <https://doi.org/10.3727/152599525X17367484906426>
- Martín, G. F. B. 2018. Social and Psychological Impact of Musical Collective Creative Processes in Virtual Environments: The Avatar Orchestra Metaverse in Second Life. *Musica/Tecnologia* 12 (1): 73-85. https://doi.org/10.13128/Music_Tec-23801
- Matthews, J. and Nairn, A. 2023. Holographic ABBA: Examining Fan Responses to ABBA's Virtual 'Live' Concert. *Popular Music and Society* 46 (3): 282-303. <https://doi.org/10.1080/03007766.2023.2208048>
- Michaud, A. 2022. Locating Liveness in Holographic Performances: Technological Anxiety and Participatory Fandom at Vocaloid Concerts. *Popular Music* 41: 1-19. <https://doi.org/10.1017/S0261143021000660>
- Miller, K. 2009. Schizophonic Performance: Guitar Hero, Rock Band, and Virtual Virtuosity. *Journal of the Society for American Music* 3: 395-429.
- Modestini, P. and Weining, C. 2025. Affordances and Experiential Dimensions of Digital Concerts: Closer the Eye, Farther the Crowd. *Music Perception* 42 (3): 269-285. <https://doi.org/10.1525/mp.2024.aa005>
- Moritzen, K. 2022. Opening Up Virtual Mosh Pits: Music Scenes and In-Game Concerts in Fortnite and Minecraft. *Journal of Sound and Music in Games* 3 (2-3): 115-140. <https://doi.org/10.1525/jsmg.2022.3.2-3.115>
- Mouillot, F. 2022. The Social and Cultural Dimension of 'Platforming' Live Music: The Case of the Hong Kong Independent Music Scene During the COVID-19 Pandemic. *Popular Communication* 20 (4): 274-291. <https://doi.org/10.1080/15405702.2021.2006663>
- Music Venue Trust. 2024. Annual Report. https://www.musicvenue trust.com/wp-content/uploads/2025/01/MVT_2024-Annual-Report.pdf. Accessed 29 April 2025.
- Onderdijk, K. E., Bouckaert, L., Van Dyck, E., and Maes, P. -J. 2023. Concert Experiences in Virtual Reality Environments. *Virtual Reality* 27 (3): 2383-2396. <https://doi.org/10.1007/s10055-023-00814-y>
- Onderdijk, K. E., Swarbrick, D., Van Kerrebroeck, B., Mantei, M., Vuoskoski, J. K., Maes, P. -J., and Leman, M. 2021. Livestream Experiments: The Role of COVID-19, Agency, Presence, and Social Context in Facilitating Social Connectedness. *Frontiers in Psychology* 12: Online. <https://doi.org/10.3389/fpsyg.2021.647929>
- Pence, H. 2008. Managing a Virtual Concert Hall in Second Life. *Music Reference Services Quarterly* 11 (2): 157-160. <https://doi.org/10.1080/10588160802143546>
- Phillips, M. and Krause, A. –
2022. The Post COVID-audience: Attitudes and Behaviours Around Live and Streamed Performance. Presented at the Internet Musicking Conference, University College

- Cork, Ireland, 30 May 2022. <https://www.youtube.com/watch?v=mWeota3T0TE>. Accessed: 28 July 2022.
2024. Audiences of the Future: How Can Streamed Music Performance Replicate the Live Music Experience? In N. T. Smith, P. Peters, and K. Molina Eds. *Classical Music Futures: Practices of Innovation*. Cambridge, UK: Open Book Publishers: 333-354. <https://doi.org/10.11647/OBP.0353.17>
- Radermecker, A. -S. V. and Angelini, F. 2024. On the Role of 'Tactile Value' in Cultural Consumption: An Empirical Research in the Live Music Industry. *Cultural Trends* Published Online: 1-25. <https://doi.org/10.1080/09548963.2024.2387024>
- Rothschild, P., Vowels, K., and Rothschild, C. 2020. Cancel, Postpone, or Reschedule: The Live Music Industry's Response to Ticket Refunds During the COVID-19 Pandemic. *MEIEA Journal* 20 (1): 45-83. <https://doi.org/10.25101/20.2>
- Sanden, P. 2012. Virtual Liveness and Sounding Cyborgs: John Oswald's 'Vane'. *Popular Music* 31 (1): 45-68. <https://doi.org/10.1017/S0261143011000456>
- Schwartz, D. T. 2009. Second Life and Classical Music Education: Developing Iconography that Encourages Human Interaction. *Journal For Virtual Worlds Research* 2 (1): 3-17. <https://jvwr-ojs-utexas.tdl.org/jvwr/article/view/392>
- Taylor, I. A., Raine, S., and Hamilton, C. 2021. Crisis as a Catalyst for Change: COVID-19, Spatiality and the UK Live Music Industry. *IASPM Journal* 11 (1): 6-21. [https://doi.org/10.5429/2079-3871\(2021\)v11i1.3en](https://doi.org/10.5429/2079-3871(2021)v11i1.3en)
- Tonelli, C. 2021. Game Music and Identity. In M. Fritsch and T. Summers Eds. *The Cambridge Companion to Video Game Music*. Cambridge: Cambridge University Press: 327-342.
- Tsalpara, C., Soulopoulos, I., Sklias, I., and Grammalidis, N. 2021. Covid-19 Pandemic's Influence on Popular/Folk Culture and Tourism in Greece: Shaping the Future and Beyond. *Springer Proceedings in Business and Economics*. Cham, Switzerland: Springer Nature: 121-129.
- United Talent Agency –
- 2021a. Forever Changed: COVID-19's Lasting Impact on the Entertainment Industry. Available at: <https://unitedtalent.app.box.com/s/j4ijgxd8169jpgkxji8eqxnyqc7lszy2>. Accessed 3 March 2025.
- 2021b. Virtual + Reality: The Future of Digital & Live Entertainment in a Post-Pandemic World. Available at: <https://unitedtalent.app.box.com/s/fcaha4xzcbvqtvc3q9e03esmvhqaab1>. Accessed 3 March 2025.
- van Lente, H., Spitters, C., and Peine, A. 2013. Comparing Technological Hype Cycles: Towards a Theory. *Technological Forecasting and Social Change* 80 (8): 1615-1628. <https://doi.org/10.1016/j.techfore.2012.12.004>
- Wang, Y. and Limb, S. -J. 2024. An Empirical Study on K-Pop Livecast Concerts in Cinema: The Next Best Experience to a Real Live Concert? *Sage Open*, 14 (4): Online. <https://doi.org/10.1177/21582440241293314>
- Whiteley, S. and Rambarran, S. Eds. 2016. *The Oxford Handbook of Music and Virtuality*. New York, NY: Oxford University Press.

- Williams, J., Ruddock, E., Mohseni, A., Gibson, S. J., Fleshner, N., Yeoh, P., Cusworth, A., Leong, J., Cohen, S., and Stringham, D. 2021. Musicking Through COVID-19: Challenges, Adaptations, and New Practices. *Journal of Music, Health, and Wellbeing*. <https://www.musichealthandwellbeing.co.uk/musickingthroughcovid19>. Accessed: 14 August 2023.
- Wray, D.D. 2024. "The Working Class Can't Afford It": The Shocking Truth about the Money Bands Make on Tour'. *The Guardian*, 25 April. <https://www.theguardian.com/music/2024/apr/25/shocking-truth-money-bands-make-on-tour-taylor-swift>. Accessed 7 March 2025.
- Zaborowski, R. 2016. Hatsune Miku and Japanese Virtual Idols. In S. Whiteley and S. Rambarran Eds. *The Oxford Handbook of Music and Virtuality*. New York: Oxford University Press: 111-128. <https://doi.org/10.1093/oxfordhb/9780199321285.013.7>
- Zhang, Q. and Negus, K. 2021. Stages, Platforms, Streams: The Economies and Industries of Live Music after Digitalization. *Popular Music and Society* 44 (5): 539-557. <https://doi.org/10.1080/03007766.2021.1921909>